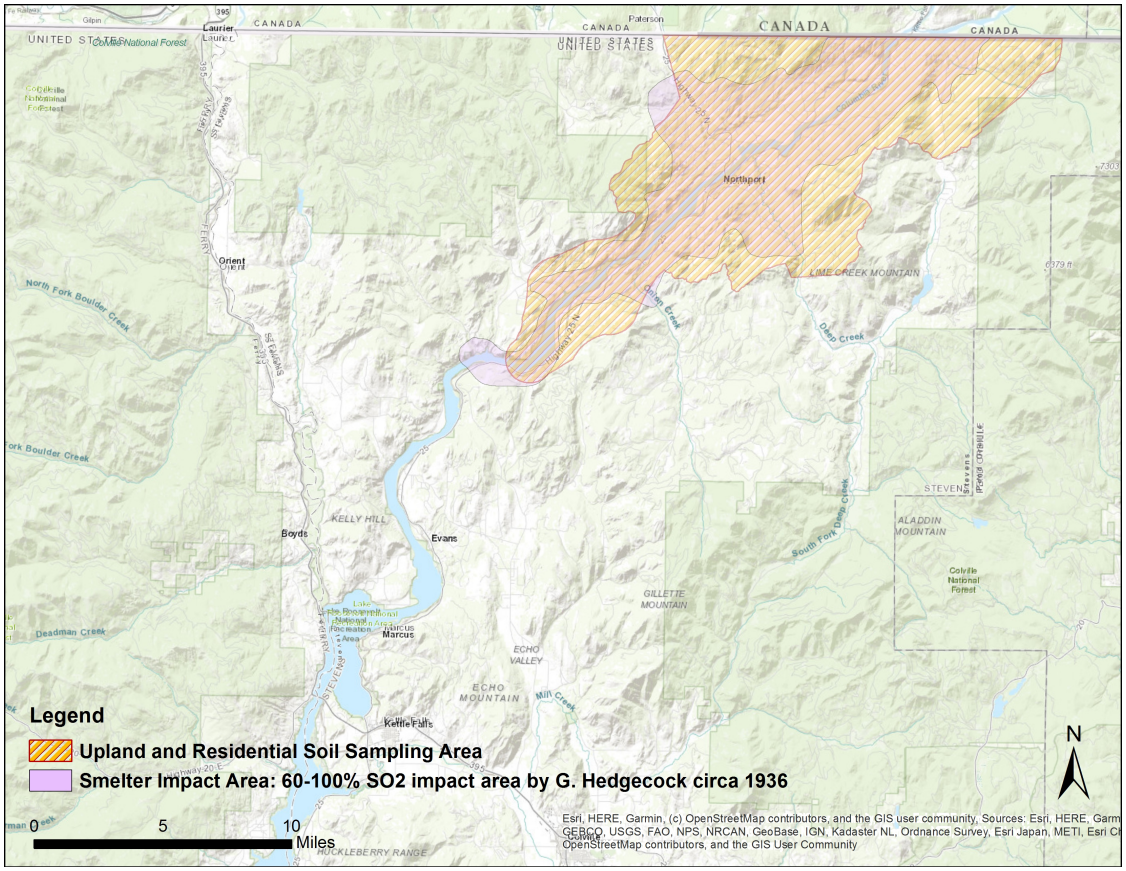
DEPARTMENT OF ECOLOGY State of Washington http://www.ecy.wa.gov

Upper Columbia River Lake Roosevelt Site



WORK, PLAY, AND EAT SAFELY THIS SUMMER

As we all begin enjoying the hot weather and outside recreation, Ecology would like to remind residents and visitors of the upper Columbia River valley to **stay safe by following the Dirt Alert Healthy Actions and the fish consumption advisory**. These simple actions reduce possible health risks.

Draft Human Health Risk Assessment available for public comment through July 24

The U.S. Environmental Protection Agency (EPA) recently published their draft Human Health Risk Assessment (HHRA). The HHRA analyzes risks to human health in the upper Columbia River valley from metal smelting pollution released in the Columbia River and to the air.

The HHRA evaluates risks to residents, recreationalists, and workers across the area studied over the past several years. The EPA is expected to use the human health risk assessment and other information to develop a comprehensive cleanup plan proposal (possibly within the next 2 to 3 years), and may consider additional early actions in residential areas.

The HHRA follows previous residential soil cleanups of lead and arsenic on 29 properties in the town of Northport and, later, 28 areas across rural, residential properties in the greater Northport area in 2004, 2014, 2016, and 2018. The EPA plans removal actions at 16 additional properties for the town of Northport in 2020.

SITE INFORMATION

Map

View Electronic Documents

Cleanup Site Details Report

Facility Site ID: # 17013

Ecology's Dirt Alert website

EPA's Upper Columbia River website

Ecology's smelter plume map

Cleanup Site ID: 12125

Location: update, Stevens County

Status: Cleanup Started

Contacts:

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Site Manager
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Public Involvement Coordinator
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In the meantime, **the Washington departments of Ecology and Health remind you to be aware of the two most prevalent pathways of potential exposure to metals contamination:**

- Eating certain fish from the upper Columbia River and Lake Roosevelt
- Handling or inadvertently ingesting soil possibly contaminated with lead and arsenic

Eating fish harvested from the Upper Columbia River/Lake Roosevelt

Anglers who harvest and consume fish should follow the fish advisory. Fish are a healthy dietary choice, and the upper Columbia River offers an excellent selection. Some fish species are healthier choices than others are. We encourage fish consumers to follow the advisory guidelines and enjoy eating fish in safe weekly or monthly quantities.

The upper Columbia River fishery is a diverse blend of stocked and wild fish. The body burdens of metal pollutants vary by species. Extensive sampling and risk analysis inform the advisory.

While impacts from smelter pollution appear to be gradually declining over time, concerning risks remain that can be safely controlled by following the fish advisory. Eat fish, be smart, choose wisely.

Exposure to lead-contaminated soil

The HHRA results reaffirm that residents of the greater Northport area remain at risk for lead exposure from soil.

Based on existing upland soil data, this continues to be of greatest importance to those living in or frequenting the river valley corridor from generally just upstream of the China Bend area, extending upriver to the international border. This encompasses the area where past residential property cleanups have occurred and areas undergoing sampling.

To see another map, visit our Dirt Alert Washington smelter plume map, and select the upper Columbia River link in the dialog box that appears on your first visit or pan over northeastern Washington to see the area. Contact us if you have questions or concerns (see right column for contact information).

Frequent visitors and residents, particularly of properties not previously cleaned up, should follow our Dirt Alert Healthy Actions.

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    - Background Characterization for Metals and Organic Compounds in Northeast Washington Lakes
    - Metals Concentrations in Sediments of Lakes and Wetlands in the Upper Columbia River Watershed
    - Upper Columbia River Upland Soil Sampling Study
    - Evaluation and Interpretation of the Sediment Chemistry and Sediment Toxicity Data for the Upper Columbia River

Robert Tan, EPA
Project Manager
(206) 553-2580

Document Repositories:

Eastern Regional Office
N 4601 Monroe St
Spokane, 99205-1265
(509)329-3415

Northport Town Hall
315 Summit St.
Northport, 99114
(509)732-4450

Colville Public Library
195 South Oak Street
Colville, 99114
(509)684-6620

Inchelium Tribal Resource Center
12 Community Loop
Inchelium, 99155-0150
(509)634-2791

Office of Environmental Trust
Bldg. #2, Colville Confederated Tribes, 1 Colville
Nespelem, 99155
(509)634-2413

Grand Coulee Library
225 Federal Street
Grand Coulee, 99133
(509)633-0972

Spokane Tribe Department of Natural Resources
6290 D Ford-Wellpinit Road
Wellpinit, 99040
(509)626-4425

Spokane Downtown Library
906 W. Main
Spokane, 99201
(509)444-5336

- Laboratory Toxicity and Benthic Invertebrate Field Colonization of UCR Sediments
- Preliminary Review and Evaluation of Available Air Quality Monitoring Data and Consideration of Potential Present-Day Health Risks
- Upland Regional Soil Background Characterization for Select Metals in Northeast Washington Watersheds

- Cleanup
  - Northport Waterfront Project
  - Black Sand Beach Slag Removal and Replacement Project
- Ongoing Litigation
- Related Information
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Historical photo of the metals smelter in Trail, B.C.

SITE BACKGROUND

The upper Columbia River/Lake Roosevelt site extends over 150 miles from the U.S.-Canadian border near Northport, Washington, to the Grand Coulee Dam. The site lies within parts of Lincoln, Ferry, and Stevens counties.

Smokestack emissions into the atmosphere, as well as direct waste releases into the Columbia River of slag and liquid effluents from metal smelting, contaminated the river and broad upland areas near the Canadian-U.S. border. Slag is an angular, somewhat glassy, industrial waste containing hazardous substances including zinc, lead, copper, and other metals.

The Teck Trail smelter, located less than 10 miles across the border in Trail, British Columbia (B.C.), on the banks of the Columbia River, is the main contaminant source. Since 1896, Teck Metals Ltd. and its predecessors (Cominco and others) have continuously operated the smelter in Trail. Smaller contributions near Northport, Washington, also came from the now-closed Le Roi smelter.

Sampling topsoil in residential yards in 2014

CONTAMINATION

Metals in Soil

Unnaturally high levels of metals, including lead and arsenic, are found in topsoil in the upper Columbia River Valley near the U.S.-Canadian border. When present, the concentrations of metals commonly observed in the upper Columbia River Valley can be a health concern. Health risks can be greatly reduced if managed properly.

- Contact Ecology (right column), or visit our Dirt Alert website, for simple actions that can help you and your family avoid potential exposure to metals in soil.
- Download Dirt Alert: Soil Safety & Sampling Guidance for People Concerned about Arsenic & Lead.
- Learn about information disclosure requirements for buying or selling real estate.
- Search our smelter plume map to see if your property is within the potentially affected area.

The U.S. Environmental Protection Agency (EPA) is directing topsoil testing efforts and cleaning up residential properties most at risk in the upper Columbia River Valley.

- Learn more on EPA's Upper Columbia River Remedial Investigation & Feasibility Study website.
- Contact Robert Tan (right column), EPA project manager, to see if your property has been sampled in the past or if you have concerns about your property.

Upper Columbia River & Lake Roosevelt Recreation

The EPA is leading several studies to assess human and ecological risks and to understand the extent of contamination in the river and reservoir. This has included recreational beach areas, water quality, sediments, and fish and other aquatic life.

Those studies demonstrate, with specific exceptions, that the beaches and water are safe for recreation on the river and in the National Recreation Area.

Several species of game fish have been tested, and some species have unnaturally high concentrations of certain contaminants.

- Follow the Washington Department of Health's fish advisory for the upper Columbia River and Lake Roosevelt to guide the frequency and amount of fish consumed to protect you and your family.
- Learn more and get involved by visiting the Lake Roosevelt Forum website.

Sturgeon study along the upper Columbia River

INVESTIGATIONS

Two main investigations focusing on the upper Columbia River site are led by separate entities, each with specific objectives. The investigations are a Remedial Investigation and Feasibility Study (RI/FS) and a Natural Resource Damage Assessment (NRDA).

Remedial Investigation and Feasibility Study

The EPA is overseeing the RI/FS. The purpose of the RI is to identify the contaminants, their locations, and human health and environmental risks. The FS will be developed later and offer cleanup options to address contaminants found during the RI.

In 2006, Teck American, Inc., entered into an agreement with the U.S. Department of Justice and the EPA to fund the RI/FS from the U.S.-Canadian border to Grand Coulee Dam and in surrounding areas. Teck does most the field investigation work with oversight by the EPA. The EPA is responsible for assessing human health risk.

- Visit EPA's Upper Columbia River Site Study website, Teck's Upper Columbia River Project website, and the Lake Roosevelt Forum website for more information.

Natural Resources Damage Assessment

Washington State (represented by Ecology), Confederated Tribes of the Colville Reservation, U.S. Department of Interior, and Spokane Tribe of Indians, collectively referred to as the Upper Columbia River Trustee Council (the Trustees), are conducting the NRDA. The purpose of NRDA is to determine past and ongoing natural resource injuries with the goal of restoring or replacing the injured resources for the public.

The Trustees are currently assessing injuries and then damages related to the public's loss of natural resources. The goal is to achieve compensation with parties responsible for the contamination to create a restoration fund for injured natural resources.

- *Preassessment Screen for the Upper Columbia River Site, Washington* (2009)
- *Injury Assessment Plan for the Upper Columbia River Site, Washington* (2012)
- Learn more about Ecology's NRDA projects.

Contributions from Ecology's Toxics Cleanup Program

Ecology has completed seven independent studies evaluating smelter contamination in northeastern Washington that have guided or informed EPA and NRDA studies.
In 2007, Ecology sampled sediments in Lake Roosevelt and the upper Columbia River, upstream of the Highway 395 Bridge near Kettle Falls. Results affirmed widespread fine sediment and industrial slag contamination extending to near the international border.

- *Field Reconnaissance and Sediment Sampling Report* (2007)

In 2010 and 2011, Ecology studied northeast Washington freshwater sediments and fish to evaluate area metals and document natural background conditions. Sediments were tested from 14 lakes and a stream, and fish tissues were collected from 13 lakes and a stream. The results identified contamination in the area of the upper Columbia River Valley.

- *Background Characterization for Metals and Organic Compounds in Northeast Washington Lakes* | *Part 1: Bottom Sediments* | *Part 2: Fish Tissue* (2011)

In 2012, Ecology gathered sediment samples from 10 lakes and wetlands along the upper Columbia River Valley to assess metals concentrations. Samples were analyzed for a number of heavy metals associated with smelter stack emissions. Smelter-caused metals enrichment was documented in several lakes along the Valley.

- *Metals Concentrations in Sediments of Lakes and Wetlands in the Upper Columbia River Watershed: Lead, Zinc, Arsenic, Cadmium, Antimony, and Mercury* (2013)

Ecology evaluated native topsoil in non-residential, upland areas within two miles of the U.S.-Canadian border in fall 2012. The sampling area covered about 15 to 20 square miles, reaching as far as 4 miles east and 6.5 miles west of the Columbia River in Stevens County. Over 120 soil samples were tested for various metals, including lead, arsenic, zinc, cadmium and mercury. The study definitively established the presence of high metals concentrations in area topsoil, leading to the follow-on studies by the EPA that have resulted in residential yard cleanups now underway.

- *Upper Columbia River Upland Soil Sampling Study* | Map | Sampling & Analysis Plan | Field Collection Logs | Tables & Chemical Data | Statistical Evaluation (2013)

Also in 2012, Ecology issued an independent evaluation of sediment toxicity testing the EPA did in 2005. EPA's sampling documented major slag accumulation and metal contamination areas, particularly in the upper-most portions of Lake Roosevelt and the riverine reaches near the U.S.-Canadian border. Ecology's analysis affirmed that sediments in the upper Columbia River are primarily contaminated by smelter-related metals in slag. Adverse effects on survival, growth, biomass, and reproduction of aquatic invertebrates are associated with exposure to UCR sediments. The work also identified data gaps and developed methods for advancing further toxicity testing and assessment.

- *Evaluation and Interpretation of the Sediment Chemistry and Sediment Toxicity Data for the Upper Columbia River* | Figures (2012)

Ecology also sponsored a study with U.S. Geological Survey scientists to evaluate the effects of metals-contaminated sediments on benthic invertebrates in the river using five sampling locations. Benthic invertebrates, meaning they do not have backbones, live in and on the bottom of water bodies and are an important food source in aquatic environments. Two types, amphipods and midges, were assessed in this study. These aquatic creatures had toxic responses to metals, particularly copper, in slag-impacted sediments.

- *Laboratory Toxicity and Benthic Invertebrate Field Colonization of UCR Sediments: Finding Adverse Effects Using Multiple Lines of Evidence* (2012)

In 2017, Ecology asked our Air Quality Program specialists to use existing air monitoring data to evaluate conditions in the upper Columbia River valley and assess whether more air monitoring is needed. Based on the assessment, we recommend additional air monitoring in the upper Columbia River valley.

- *Preliminary Review and Evaluation of Available Air Quality Monitoring Data and Consideration of Potential Present-Day Health Risks: Upper Columbia River Valley, near Northport, Washington* | Focus sheet: *Upper Columbia River Valley Air Quality* | Ecology memo recommending additional air monitoring (2017)

In 2019, Ecology worked with Washington State University to establish natural background metal values that represent upper-percentile thresholds in soils within 11 state-defined watersheds (Water Resource Inventory Areas) for 18 metals and metalloids. Background soil metals analysis is intended to guide the application of environmental regulations in northeast Washington State and offers a framework for possible application in other areas. The geographic boundaries were selected to guide and inform cleanup decisions and other environmental work occurring in the greater Upper Columbia River region.

- *Upland Regional Soil Background Characterization for Select Metals in Northeast Washington Watersheds* | *Appendix E: Analysis and Estimation of Background Metals Concentrations in Soils and Sediments of the Upper Columbia River Basin* (2019)

Overall, findings from the Ecology studies confirmed elevated levels of metals in topsoil and sediments in parts of the upper Columbia River Valley and nearby lakes and wetlands. The studies also traced most of these metals to past smelter emissions in Trail, B.C.

Granulated slag on Black Sand Beach before cleanup, April 2010

CLEANUP

Northport Waterfront Project

We are directing and funding an investigation and cleanup of smelter-related metals contamination on Northport's public waterfront area.

The project area includes all permanently and seasonally exposed areas of the Columbia River bank and shore directly next to the Northport City Park and boat launch, which was cleaned up by BNSF Railway. From the river, this area is between Smelter Rock downstream to the Northport Highway 25 Bridge, and is associated with the historic Le Roi Smelter that was located at and around the City Park. The area remains polluted by smelter wastes that were dumped and dispersed along the shore.

Our goal is to assess options for protecting people and restoring the environment next to the City Park. We look forward to working with local government, businesses, and residents during the investigation and cleanup process to understand your concerns and the community's vision for the waterfront.

Black Sand Beach Slag Removal and Replacement Project

Black Sand Beach is next to state-owned public land along the upper Columbia River about 3 miles south of the U.S.-Canadian border and about 7-8 miles north of Northport, Washington.

Prior to cleanup, the beach sand was granulated slag that settled there over many decades of discharges into the river from the Teck smelter in Trail, B.C. Ecology concluded that removing slag from Black Sand Beach would get the waste out of the river, protect the ecological environment, the health of the river, and benefit recreationalists.

In 2010, under a voluntary agreement between Ecology and Teck, contractors removed about 9,100 tons (6,300 cubic yards) of sand contaminated with granulated slag from the beach. Clean sand and gravel was used to establish the recreational beach, and the slag was hauled to Teck's recycling facility near Waneta, B.C.

The public provided important input during the project that helped guide several technical decisions affecting the cleanup. The contractor hired local companies for about 50 percent of

the project work, bringing positive economic impact to the community.

The upper Columbia River, May 2008

ONGOING LITIGATION

In 1999, the Confederated Tribes of the Colville Reservation (CCT) petitioned the EPA to conduct an assessment of Upper Columbia River contamination. In 2003, the EPA issued Teck a Unilateral Administrative Order requiring Teck to investigate the site and produce a plan to identify ways to investigate the contamination caused by the Trail Smelter. Teck did not comply.

In 2004, the original Plaintiffs in this suit, Joseph Pakootas and Donald R. Michel (collectively Pakootas), filed a complaint in the U.S. District Court for the Eastern District of Washington under the citizens' suit provision of the federal Comprehensive Response Compensation and Liability Act (CERCLA). CERCLA (often called Superfund) makes certain parties liable for costs and damages associated with releases of hazardous substances. The complaint asked the district court for declaratory and injunctive relief, including enforcing EPA's Order against Teck. Washington State quickly filed a Complaint in Intervention, which was granted. The State and CCT complaints have been amended during the litigation to include NRDA, cost recovery, and air pathway liability.

The case continues to advance along under basically three phases:

- Liability
- Response costs
- NRDA

The plaintiff parties (Washington and CCT) moved forward on Teck's CERCLA liability under the framework the Court defined in Pakootas I (that Teck could be held liable under CERCLA for releases of Teck contaminants in the upper Columbia River valley).

On the eve of trial, Teck conceded in a stipulation that both its slag and liquid effluent crossed into the United States and had come to be located in the upper Columbia River valley, had released, and continue to release hazardous substances into the sediments and waters of the Columbia River. The district court ultimately held that Teck was liable as a CERCLA "arranger" on December 14, 2012. Extraterritorial arguments, based on the fact that the Trial smelter is outside the U.S., have continued to be rejected by the courts. Securing Teck's U.S. legal liability for legacy pollution caused by air emissions pollution became procedurally stalled in 2016 due to a 9th Circuit decision. The decision was based on a highly nuanced legal interpretation (not a science-based determination) of the definition of "disposal" in CERCLA, which is also referenced in another federal waste environmental law (the Resource Conservation and Recovery Act).

State and CCT reimbursement of response costs have been awarded or conditionally settled, and in September 2018 the Ninth Circuit Court denied Teck's appeal, upholding the previous decision that made the company liable for UCR cleanup costs. The NRDA claim phase has yet to begin.

For the better part of 20 years now, Teck has continued to fight liability and associated obligations at all levels for the century's worth of industrial wastes Trail historically discharged directly to the Columbia River or from smoke stacks at the smelter complex. The litigation and multiple appeals continue in federal court.

Learn more about litigation

Ecology and Washington Office of the Attorney General staff are available to assist with your questions or information requests.

Based on past requests and interest, we have made some of the expert reports generated during the liability litigations available online. You may download a report by clicking its title below.

- Queneau, P.B. 2010. *Expert Opinion - Pakootas et al. v. Teck Cominco Metals*.
- Bierman, V.J. 2010. *Expert Report - Waste Transport in Columbia River - Pakootas et al. v. Teck Cominco Metals*.
- McLean, D.G. 2010. *Opinion on the Transport of Metallurgical Slag by the Columbia River, Trail B.C. to International Border. Northwest Hydraulic Consultants*.
- Vlassopoulos, D. 2010. *Expert Report of Dimitrios Vlassopoulos. Pakootas et al. v. Teck Cominco Metals Ltd*. | Appendices A, B, C1, C2, D1, D2, E, F
- Quivik, F.L. 2010. *History of Mining, Milling, and Smelting in NE Washington. Pakootas et al. v. Teck Cominco Metals, Ltd*.
- Queneau, P.B. 2011. *Expert Opinion – Rebuttal of Higginson. Pakootas et al. v. Teck Cominco Metals*.
- McLean, D.G. 2011. *Opinion on the Transport and Fate of Metallurgical Slag Discharged into the Columbia River. Northwest Hydraulic Consultants*.
- Stevens, Jennifer. 2011. *Expert history report. A Rebuttal Report to: Fredric Quivik, Terence McNulty, Adrian Brown, and Rex Bull*.
- Vlassopoulos, D. 2011. *Rebuttal Report. Pakootas et al. v. Teck Cominco Metals, Ltd*.
- Queneau, P.B. 2014. *Expert Opinion of Paul B. Queneau. Pakootas, et al. v. Teck Cominco Metals Ltd*.
- Vlassopoulos, D. 2014. *Expert Report of Dimitrios Vlassopoulos. Pakootas et al. v. Teck Cominco Metals Ltd*.

RELATED INFORMATION

- Ecology's Dirt Alert website
- Fish advisory for the upper Columbia River and Lake Roosevelt
- Stevens County Public Health Assessments
- EPA's Upper Columbia River Site Study website
- Teck's Upper Columbia River Project website
- Lake Roosevelt Forum website
- Photo Gallery

RELATED CLEANUP SITES

- Black Sand Beach (cleanup complete)
- LeRoi Co. Smelter (cleanup complete)
- Northport Waterfront (investigation complete - cleanup options under development)
- Van Stone Mine (cleanup plan under development)

ADDITIONAL RESOURCES

- Acronyms used by the Toxics Cleanup Program
- Cleanup Process: Major Steps & Definitions
- Data Submittal Requirements for All Cleanup Sites
- Toxics Cleanup publications